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**Report No. 3
Financial Model and
Project Cost Reduction
Evaluation**

**Solid Waste and Public
Clean-Up Project
Governorate of Alexandria,
Egypt**

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November 14, 2000

Prepared for
Governorate of Alexandria, Egypt
and
United States Agency for
International Development

Prepared by
Abt Associates Inc.
The Institute for Public-Private
Partnerships

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REPORT NO. 3
FINANCIAL MODEL AND PROJECT COST
REDUCTION EVALUATION

Solid Waste and Public Clean-Up Project
Governorate of Alexandria, Egypt

INTRODUCTION

The Financial Envelopes Opening Committee (FEOC) appointed by the Governorate of Alexandria (GOA) has been given the responsibility of evaluating the financial tenders submitted for the Solid Waste and Public Clean-Up Project. An important aspect of the FEOC's work in the financial phase of the tender evaluation process is to compare prices of specific services provided in the price tables by each tenderer. The first section of this report includes a financial model that can be used by the GOA to facilitate a fair and equitable comparison of prices over the 15-year contract period.

There is the distinct possibility that the overall service prices submitted by all of the technically acceptable tenderers will exceed the funds available. To obtain the most service practicably possible, the GOA may want to consider potential methods for reducing service contractor costs. Three such alternatives are described and offered for GOA consideration at the end of this report.

FINANCIAL MODEL FOR COMPARING TENDER PRICES

This financial model has been developed to assist the FEOC in evaluating the financial bids from technically qualified tenderers on the Solid Waste and Public Clean-Up Project. A sample of the model output is provided in Appendix A.

The financial model has been prepared using Microsoft Excel and consists of 13 linked worksheets. The diskette provided with this work product includes two files. The first file, "Sample GOA Financial Model", includes numbers to illustrate the workings of the model and its potential use. The numbers have been taken out of the second file, "GOA Financial Model", and is ready for data input by the FEOC.

The financial model allows the prices of up to eight tendering firms to be compared for each of the nine service functions for which services were requested in the tender documents. For each tendering firm, the model computes annual cost for each of nine services for the 15-year contract term. After accounting for price escalations that occur every third year (e.g., years 4, 7, 10, and 13) according to a formula supplied by the contractor, the model produces net present values of the 15-year costs for each of the technically qualified tenderers.

The following discussion has been designed as a user's guide for the financial model. It is not necessary to have advanced Microsoft Excel skills to use this model; users only need to follow the directions to input data and print final reports that summarize the model's output.

Linked Worksheets

The various worksheets contained in the financial model are designated by abbreviated names on worksheet tabs in the lower section of the screen. The abbreviations and associated descriptions are given in Table 1 below.

Table 1: Worksheet Abbreviations and Descriptions

Worksheet	Description
“input”	The user enters the inputs to the model.
“sum1”	Present Value of Costs: Functional and Geographic Summary
“sum2”	Summary of total present value for each tendering firm.
“ubo”	Provides the option to unbundle services functionally and geographically.
“coll_res”	Collection of Residential and Commercial Waste
“coll_med”	Medical Waste Collection and Treatment
“coll_ind”	Collection of Industrial Waste
“sweep”	Street Sweeping and Washing
“beach”	Beach Cleaning Operations
“comp”	Composting Facility Rehabilitation and Operation
“land”	Construction and Operation of New Landfill
“dumpclose”	Closure of Existing Dumps
“trans”	Transition to New System

Inputs Worksheet

The first tab is the Inputs Worksheet (input). The user must input the names of the tendering firms, the cost of capital for various services, and price escalators for population growth and inflation. These inputs are described below.

Names of Tendering Firms --

The user of the financial model should begin by entering the names of the eight tendering firms in Cells B4 through B11. Note that inputs to the model should only be made in cells that are colored in yellow. Non-input cells are *cell-protected*; the user cannot enter data within these cells. Tampering with the cell protection feature and entering data in other non-input cells should be avoided as it will compromise or damage the computational ability of the model.

Cost of Capital--

The cost of capital for the various services should be entered in Cells D15 through D23. These services include the following as described in the tender document:

- Collection: Residential and Commercial Waste
- Medical Waste Collection and Treatment
- Industrial Waste Collection and Transport

- Sweeping Streets and Washing
- Beach Cleaning Operations
- Composting Facility Rehabilitation and Operation
- Construction and Operation of New Landfill
- Closing Existing Dumps
- Transition to New System

The cost of capital reflects the opportunity cost of the funds used to pay for the solid waste services. It is expressed as an interest rate, and reflects the required rate of return for investing funds in the project. It is designed to compensate the investor for inflation, risk, and the time value of money.

Users will likely decide to use one cost of capital figure for all of the services listed above. However, the actual cost of capital could vary between these services and the model allows for such differences. The financial model does not compute the cost of capital for any of the services; rather, it is a required input.

Price Escalators for Population Growth and Inflation--

The tendering firms can increase their prices in years 4, 7, 10, and 13 of the 15-year contract period. The price increases specified by the Tendering firms should be input into the model in Cells D32 through G39. These increases allow the Tendering Firm to adjust prices to reflect inflation and population growth.

Annual price increases are not permitted; prices can only be adjusted every 3 years beginning in year 4. The price-escalation factors in Cells D32 through G39 are 3-year percentage increases, not annual percentage increases. Thus, if a tendering firm specifies annual price increases, the annual increase must be converted into a three-year percentage increase. It must be determined whether the 3-year increases that are computed from these annual amounts are based on simple or compounded interest.

For example, if the tendering firm quotes 5 percent per year, the simple interest method would assume a 3-year price increase of $3 \times 5 = 15$ percent. However, the compound interest method would assume the 3-year price increase would be 15.8 percent, computed as $(1.05)^3 - 1 \times 100$ percent. Recall that the model asks for 3-year percentage increases: thus, if a Tendering Firm quotes an annual price escalation factor, clarification may be needed to determine whether a simple or compounded 3 year price escalation factor should be input into the model.

It is important to note that actual prices for services are not input on the input page. Rather, these prices are input on the actual worksheets designated for each service function. Price inputs will be required in all of the remaining worksheets except for the “sum” and “ubo” worksheets.

The next two worksheets include a final summary worksheet (sum) and an unbundling options (ubo) worksheet. These are final output worksheets. Discussion pertaining to these two worksheets will be deferred until the end of the model description.

Collection: Residential and Commercial Waste

In this worksheet, abbreviated “coll_res”, the user must input year 1 prices for residential and commercial waste collection in the yellow-colored sections in column E. These prices are entered separately for the 18 geographic zones. The year 1 prices for Tendering Firm No. 1 are entered in cells E9 through E26; the year 1 prices for Tendering Firm No. 2 are entered in cells E44 through E61. This process is repeated for all tendering firms.

The prices for years 2 through 15 are automatically calculated based on the year 1 prices and the price escalation factors previously input on worksheet “input”. These prices for years 2 through 15 are shown in columns F through S. The present value of the costs in years 1 through 15 is computed for each zone in column C, which is colored in gray. Total present value and total annual costs for each year are then summarized in rows 28, 63, 98, 133, 168, 203, 238, and 273 for Tendering Firm Nos. 1 through 8, respectively.

Medical Waste Collection and Treatment

This worksheet, abbreviated “coll_med”, is set up identically to the previous worksheet for residential and commercial waste collection. The user must input year 1 prices for medical waste collection and treatment in the yellow-colored sections in column E. These prices are entered separately for the 18 geographic zones. The year 1 prices for Tendering Firm No. 1 are entered in cells E9 through E26; the year 1 prices for Tendering Firm No. 2 are entered in cells E44 through E61. This process is repeated for all tendering firms.

The prices for years 2 through 15 are automatically calculated based on the year 1 prices and the price escalation factors previously input on worksheet “input”. These prices are shown in columns F through S. The present value of the costs in years 1 through 15 is computed for each zone in column C, which is colored in gray. Total present value and total annual costs for each year are then summarized for each Tendering Firm in rows 28, 63, 98, 133, 168, 203, 238, and 273 for Tendering Firm Nos. 1 through 8, respectively.

Industrial Waste Collection and Transport

This worksheet, abbreviated “coll_ind”, is set up identically to the previous two collection worksheets. The user must input year 1 prices for industrial waste collection and transport in the yellow-colored sections in column E. These prices are entered separately for the 18 geographic zones. The year 1 prices for Tendering Firm No. 1 are entered in cells E9 through E26; the year 1 prices for Tendering Firm No. 2 are entered in cells E44 through E61. This process is repeated for all tendering firms.

The prices for years 2 through 15 are automatically calculated based on the year 1 prices and the price escalation factors previously input on worksheet “input”. These prices are shown in columns F through S. The present value of the costs in years 1 through 15 is computed for each zone in column C, which is colored in gray. Total present value and total annual costs for each year are then summarized in rows 28, 63, 98, 133, 168, 203, 238, and 273 for Tendering Firm Nos. 1 through 8, respectively.

Sweeping Streets and Washing

This worksheet, abbreviated “sweep”, is set up identically to the previous collection worksheets. The user must input year 1 prices for sweeping streets and washing in the yellow-colored sections in column E. These prices are entered separately for the 18 geographic zones. The year 1 prices for Tendering Firm No. 1 are entered in cells E9 through E26; the year 1 prices for Tendering Firm No. 2 are entered in cells E44 through E61. This process is repeated for all tendering firms.

The prices for years 2 through 15 are automatically calculated based on the year 1 prices and the price escalation factors previously input on worksheet “input”. These prices are shown in columns F through S. The present value of the costs in years 1 through 15 is computed for each zone in column C, which is colored in gray. Total present value and total annual costs for each year are then summarized in rows 28, 63, 98, 133, 168, 203, 238, and 273 for Tendering Firm Nos. 1 through 8, respectively.

Beach Cleaning Operations

This worksheet, abbreviated “beach”, is set up identically to the previous collection and sweeping streets worksheets. The user must input year 1 prices for beach cleaning operations in the yellow-colored sections in column E. These prices are entered separately for the 18 geographic zones. The year 1 prices for Tendering Firm No. 1 are entered in cells E9 through E26; the year 1 prices for Tendering Firm No. 2 are entered in cells E44 through E61. This process is repeated for all tendering firms.

The prices for years 2 through 15 are automatically calculated based on the year 1 prices and the price escalation factors input earlier. These prices are shown in columns F through S. The present value of the costs in years 1 through 15 is computed for each zone in column C, which is colored in gray. Total present value and total annual costs for each year are then summarized in rows 28, 63, 98, 133, 168, 203, 238, and 273 for Tendering Firm Nos. 1 through 8, respectively.

Composting Facility Rehabilitation and Operation

This worksheet is abbreviated “comp”. The user must input year 1 prices in column E. Year 1 prices are entered for three different facilities. The year 1 prices for Tendering Firm No. 1 are entered in cells E9 through E12; the year 1 prices for Tendering Firm No. 2 are entered in cells E17 through E19. This process is repeated for all tendering firms.

The prices for years 2 through 15 are automatically calculated based on the year 1 prices and the price escalation factors previously input on worksheet “input”. This is done separately for each of the three facilities for each Tendering Firm. These prices are shown in columns F through S. The present value of the costs in years 1 through 15 is computed for each zone in column C, which is colored in gray. Total present value and total annual costs for each year are then summarized in rows 13, 21, 29, 37, 45, 53, 61, and 69 for Tendering Firm Nos. 1 through 8, respectively.

Construction and Operation of New Landfill

This worksheet is abbreviated “land”. The user must input year 1 prices for the single landfill facility in column E. The year 1 prices for Tendering Firm No. 1 are entered in cell E9; the year 1 prices for Tendering Firm No. 2 are entered in cell E12. This process is repeated for all tendering firms.

The prices for years 2 through 15 are automatically calculated based on the year 1 prices and the price escalation factors previously input on worksheet “input”. These prices are shown in columns F through S. The present value of the costs in years 1 through 15 is computed for each zone in column C, which is colored in gray.

Closing Existing Dumps

This worksheet is abbreviated “dumpclose”. The user must input year 1 prices in column E. Year 1 prices are entered for three different facilities. The year 1 prices for Tendering Firm No. 1 are entered in cells E9 through E12; the year 1 prices for Tendering Firm No. 2 are entered in cells E17 through E19. This process is repeated for all tendering firms.

The prices for years 2 through 15 are automatically calculated based on the year 1 prices and the price escalation factors input earlier. This is done separately for each of the three facilities for each Tendering Firm. These prices are shown in columns F through S. The present value of the costs in years 1 through 15 is computed for each zone in column C, which is colored in gray. Total present value and total annual costs for each year are then summarized for each tendering firm in rows 13, 21, 29, 37, 45, 53, 61, and 69.

Transition to New System

This worksheet, abbreviated “trans”, covers the transition costs to the new system. The user must input year 1 prices in column E. The year 1 prices for Tendering Firm No.1 are entered in cell E9; the year 1 prices for Tendering Firm No. 2 are entered in cell E12. This process is repeated for all tendering firms.

The prices for years 2 through 15 are then automatically calculated based on the year 1 prices and the price escalation factors previously input on worksheet “input”. These prices are shown in columns F through S. The present value of the costs in years 1 through 15 is computed for each zone in column C, which is colored in gray.

Present Value of Costs: Functional and Geographic Summary

This worksheet, abbreviated “sum1”, summarizes the present values of the costs for each tendering firm, both geographically (zones 1 through 18) and functionally (for each service). No input is required on this worksheet; it is a summary-results worksheet.

In the first section of this worksheet, Cells C9 through S26, the present values of the costs for the various services are given in columns C, E, G, I, K, M, O, Q, and S. The present values of the costs are divided geographically by zones 1 through 18 in rows 9 through 26 for the services in columns C, E, G, I, and K. The costs for services in columns M, O, Q, and S are

not provided in this sample model, but are provided in the same manner as the previous services listed. The total present value for all services across all zones is then summarized in cell C30, which is colored blue for emphasis. This process is repeated for the other seven tendering firms in rows 35 through 268.

Summary Table of Total Present Values

This worksheet, abbreviated “sum2”, provided the total present value for each service by tenderer and then the totals for each tendering firm. No input is required on this worksheet; it is a summary-results worksheet. From this table, it is easy to identify the tenderer with the lowest total present value of costs by service function and for all services.

Evaluating Unbundling Options

This worksheet, abbreviated “ubo” allows the user to unbundle services functionally and geographically across various Tendering firms. For each tendering firm, the user should place an “x” in the appropriate column to identify whether the user wants the particular service to be included. If included, the present value of the costs will be reported for each zone.

Geographic unbundling is accomplished by placing “x” in column A for the various zones. For example, if the user does not want to include zones 4 and 8 for Tendering Firm No. 1, the user should not place an “x” in cells A14 and A18. If the user does not want to have Tendering Firm No. 1 provide medical waste collection, the user should delete the “x” that is in cell F6 for Tendering Firm No. 1.

BALANCING SERVICE COSTS AND REVENUES

At the present time, it is not known what level of annual fees the technically qualified tenderers will request in their bids. However, as discussed in the sections that follow, it is likely that these fees will exceed the 100 million LE per year that is expected to be collected through user charges for solid waste management services that are attached to electric bills. Thus, alternative financing approaches or some reconfiguration of service delivery to reduce costs may be needed to ensure sustainability.

This analysis evaluates the impact of improved and expanded solid waste and public cleaning services on system costs and GOA funding needs. In addition, the potential of three alternatives with the potential to reduce costs and/or annual funding requirements is analyzed for GOA consideration.

Current System Revenues and Costs

Revenue --

The revenue for solid waste management services comes from two main sources: the annual GOA fund and the cleansing fund (a cleansing tax of 2 percent of rental income is collected from real estate owners). According to a report issued in May 1999, 55.9 percent of the revenues come from the GOA, 28.5 percent comes from the cleansing fund, and the

remaining 15.6 percent comes from penalties, conciliation fees, and community development projects.

Currently, these funds are used to provide a limited number of services including residential and commercial waste collection, street sweeping, and operation of three composting plants and dumping sites.

Current Costs--

In FY97/98, a total of 18,384,625 LE was budgeted for GOA provision of solid waste management services. According to the report, the current annual budget for solid waste services for the GOA had increased to 20 million LE. Costs are not currently allocated by type of activity (e.g., collection, sweeping, etc.). Wages and incentives comprise about 56.6 percent of total costs. It was reported that there are insufficient funds in the budget for capital expenditures for new equipment and trucks and for adequate maintenance and repair of existing equipment.

Previously Reported Cost Estimate for Improving Operations: GOA

The *Full Cost Accounting* report examined the cost of increasing the efficiency of solid waste management services by improving GOA operations. The report identified incremental costs to improve operations of approximately 25.63 million LE including the following:

• 37 trucks	L.E.	10,730,000
• Bulldozers	L.E.	1,500,000
• 1 compactor	L.E.	850,000
• 5 sweeping machines	L.E.	2,000,000
• Increase in the maintenance budget	L.E.	6,700,000
• Depreciation (replacement) costs	L.E.	1,400,000
• Personnel articles	L.E.	200,000
• Restructure the system	L.E.	2,000,000
• Training	L.E.	250,000

Adding these costs to the FY97/98 budget of 18.4 million LE yields a revised estimated annual cost of 44 million LE.

Several of the costs identified above may be underestimated. For example, it was suggested that the maintenance budget be increased to at least 10 percent of asset value, an increase of 6.7 million LE. However, due to the age and condition of much of the equipment, the maintenance budget could more realistically need to be increased to 20 or 30 percent of asset value. In addition, annual depreciation expenses currently based on a 10-year straight-line approach (10 percent per year) should be depreciated on a 5 or 7-year basis. Thus, a depreciation rate of 10 percent per year is low with 12 to 15 percent appearing to be more realistic. While a complete engineering/financial analysis would need to be conducted to estimate actual maintenance and depreciation expenses, it does appear likely that the cost estimates to improve services are too low.

In addition to the potential underestimation of some costs, it is important to also keep in mind that the increased level and scope of services envisioned in the 1999 report did not include many of those services requested for privatization in the GOA tender document. This underestimation of future costs is analyzed in more detail in the following sections.

Previously Reported Cost Estimate for Upgrading: Private Sector Participation

The *Full Cost Accounting* report also provided a “full cost estimate” of upgrading solid waste management services with private sector participation. A summary is provided in Table 2.

Table 2: Cost of Upgrading Scheme

Item	Capital Cost (Million LE)	Operation and Depreciation Cost (Million LE)
Collection	26.936	14.221
Sweeping (manual)	2.937	3.588
Sweeping (mechanical)	4.150	1.480
Transfer stations	17.740	7.419
Fleet to the landfill	47.112	11.822
Landfill	6.998	1.405
Compost plants	59.000	7.720
Garages	Rental basis	2.740
Overhead	3.750	1.580
TOTAL	168.623	51.975

The increased collection costs can be attributed to the higher level of service that would be provided. The proposed collection scheme discussed in the report included only daily door-to-door collection from residential and commercial (e.g., shops, hotels, restaurants, small industries, etc.) sources. Additional capital investment to implement mechanized street sweeping for the majority of main roads and squares, five transfer stations, three composting facilities, and a new landfill are also included in the estimate.

The annual cost of the upgrading scheme was estimated in the report to be 77.268 million LE. This includes the 51.975 million LE annual running and depreciation (replacement) cost, and an estimated annual interest expense of 25.293 million LE, which is based on a bank loan with a 15 percent flat annual interest rate:¹

Running and Depreciation Cost	L.E.	51.795 million
Interest on Loan (15% flat interest)	L.E.	25.293 million
Total	L.E.	77.268 million

It is likely that these costs are still understated. For example, it is estimated that approximately 14.1 million LE would be provided to the GOA from the sale of existing

¹ The principal expense in these loans is quite appropriately excluded. Including both depreciation expense and principal repayment would be double-counting the expense.

trucks (11.1 million LE) and containers (3 million LE) to the private sector for waste collection. Furthermore, it is estimated that 1.377 million LE for carts, trolleys, and mechanized sweeping equipment for street sweeping equipment and 0.75 million LE for wheel loaders for a transfer station would similarly be collected from the private sector contractor(s). However, even if these nominal amounts are stipulated in a contract between the private sector contractor and the GOA, the private sector contractor will simply increase the annual charge to recover any overpayment of assets to the GOA.

These costs also ignore the profit that a private sector contractor would expect to earn. Based on a 20 percent profit margin, the annual cost estimate above yields an annual price of 96.6 million LE.² If the annual costs are understated, the annual price could easily exceed 100 million LE.

Future Funding of Services Requested in Tender Document

The GOA plans to pay for solid waste services through user fees that are attached to electric bills. Incremental revenue of 100 million LE for solid waste services is initially projected. While it is not known at the present time what level of annual fees the technically qualified tenderers will request in their bids, it is likely that 100 million LE will not be sufficient.

Annual funding of at least 96.6 million LE would be needed to cover the services discussed and detailed in the *Full Cost Accounting of SWM in Alexandria Governorate Report* of May 1999. However, the tender document requires services that were not included in the report. Those additional services include the following:

- Industrial Waste Collection and Transport
- Medical Waste Collection and Treatment
- Composting Facility Rehabilitation and Operation
- Closing Existing Dumps
- Beach Cleaning Operations.
- Statue, Fountain, Memorial, Bridge, and Tunnel Cleaning
- Transition to New System

The annual price offers in the bids are likely to exceed 96.6 million LE. Not only are an increased number of services required, but the tender document also requires substantial increases in the quality of service provision. A line-by-line or an item-by-item comparison of service quality between the services requested in the tender document and the current level of services or those prescribed in the service upgrade in the Full Accounting Cost Report is beyond the scope of this report. However, the high standards of service delivery prescribed throughout the tender document are likely to require substantially higher annual price proposals from the technically qualified tenderers.

Increased revenues to offset the potential lack of funding can be obtained by establishing a collection and disposal fee for industries and medical facilities. The GOA will need to establish the pricing structure and enter into contracts with the industries and medical facilities.

²This is computed by dividing the annual cost of 77.268 LE by 0.8.

ALTERNATIVE APPROACHES FOR REDUCING FUNDING REQUIREMENTS

With annual tariffs likely to exceed the 100 million LE to be recovered from the user fees attached to electric bills, alternatives to reduce the cost of service may be needed to implement programs desired by the GOA. Alternative methods to reduce the overall cost may include the following:

- Providing low interest rate loans.
- Allowing the use of existing GOA solid waste vehicles.
- Reducing the scope of services provided by the contractor(s).

The potential cost reduction benefit associated with each of these alternatives is evaluated in subsequent sections below.

Low Interest Rate Loans

The tenderer awarded the contract for solid waste and public cleaning services for the GOA will incur substantial capital expenditures associated with new equipment purchases (e.g., trucks, containers, sweepers, etc.), composting facility rehabilitation, construction of a medical waste treatment center and new landfill, and closure of the existing dumps. The contractor will incur these “up-front” costs in a relatively short time period of a few years, but will only be able to recover them over the 15-year length of the concession period.

The fee requested by the contractors will reflect all of their costs for providing service plus allowance for a reasonable return on their investment (i.e., profit). Part of the cost of providing service will be the financing costs (i.e., the cost of borrowing money) associated with any capital or other up-front costs incurred by the contractor. Thus, the financing costs incurred by the contractors will be passed along to the residents of Alexandria in the form of higher tariffs for service.

The level of capital expenditure that will require financing by the contractor is not yet known. In the “Cost of Improved Operation” section in the Full Cost Accounting report, new capital expenditure requirements of 15 million LE were identified. This amount is low. In the “Upgrading the Service through Private Sector Participation” section, these up-front costs or capital expenditures total a more realistic 168.623 million LE. Furthermore, even these capital costs fall short, as they do not account for the expanded scope and level of services prescribed in the tender document. The addition of a medical waste treatment center, the closure of existing dumps, and composting facility rehabilitation could cause up-front or capital costs to exceed 200 million LE.

The annual payments a contractor must make on a 200 million LE loan are significant. For example, the annual payment on a 200 million LE loan that has a 15-year term and a fixed interest rate of 15 percent per year is 34.2 million LE.

In some cases in the past, governmental bodies have been able to lower the financing costs to a contractor by issuing a sovereign guarantee on the contractor’s loan. Table 3 illustrates

how lowering the interest rate on a 200 million LE loan can significantly reduce the annual payment for such a loan.

Table 3: Loan Payment: 15-Year Fixed Interest Rate Loan for 200 Million LE³

Fixed Interest Rate	Annual Payment
2.50%	L.E. 16.2 million
5.00%	L.E. 19.3 million
7.50%	L.E. 22.7 million
10.0%	L.E. 26.3 million
12.5%	L.E. 30.2 million
15.0%	L.E. 34.2 million

As shown, subsidized low -interest rate financing at 5 percent per year could lower the annual loan payment from 34.2 million LE (based on an annual interest rate of 15 percent) to 19.3 million LE; this subsidized financing produces savings of nearly 15 million LE per year. These savings could be passed along to consumers in the form of lower monthly service fees for provided services or could lower the subsidy provided by the national or local government to cover revenue shortfall from providing service delivery.

Use of Existing GOA Equipment

The tender document currently specifies that the contractor who is awarded the contract pay the GOA for specified vehicles and equipment that the GOA currently uses in providing solid waste and public cleaning services. On the surface, this appears to be a fiscally responsible requirement by the GOA, which is trying to recover the remaining (salvage) value of its equipment that it will no longer use. However, it is important to keep in mind that the amount that the contractor pays the GOA for old vehicles and equipment will increase their costs by an equal amount. These costs are simply “passed through” to the GOA in the tender prices.

As an alternative, allowing the vehicles to be used by the contractor in providing solid waste services at no cost should reduce the requested annual cost by an amount equal to the “waived” purchase price plus the cost of capital (interest). It is recommended that such an approach be considered. Such a provision should also stipulate that equipment be used in providing solid waste services in the GOA for the remainder of its useful life. It may also be necessary to require that any equipment, which may be expected to have value beyond the 15-year concession period, either be excluded from this arrangement or returned to GOA ownership at the end of the concession.

Reducing the Scope of Services Provided by the Contractor

The tender document currently specifies a very high level of solid waste and public cleaning services. It is likely to result in an overall service price that exceeds the 100 million LE that

³ Assumes annual payments and annual compounding.

is expected to be recovered through user fees attached to electric bills. It may be necessary to devise a plan that begins with a reduced scope of service; phasing in additional services over time as increased funding from user fees or other sources becomes available.

Prioritizing Services--

The GOA would need to prioritize the solid waste and public cleaning services from highest to lowest priority and only implement those that can be funded within the current cost recovery scheme. Table 4 illustrates such a procedure. Services are simply identified as Service No. 1, Service No. 2, etc. As illustrated in the table, Service No. 4 has been deemed the highest priority service; Service No. 7 has been deemed the lowest priority service.

The annual cost for each service is listed in the middle column. The third column indicates the cumulative annual cost for all services included up to the current service. For example, assume only 100 million LE could be spent in a given year for solid waste services. The GOA would only be able to pay fully for Service Nos. 4, 6, 2, 3, and 1 with accumulative annual costs for these services reaching 85 million LE.

The GOA could not afford Service No. 8 because the total budget would exceed the 100 million LE available. The GOA would be forced to choose between accepting the lower-priority Service No. 5 (with total cost reaching the cap) or reconfiguring Service No. 8 in a way that reduces its total cost. Service Nos. 9 and 7 could only be added over time as budget funding allows.

Table 4: Prioritizing Services with Budget Constraints

Solid Waste Service No.	Annual Cost (Million LE)	Cumulative Annual Cost (Million LE)
4	15	15
6	10	25
2	25	50
3	15	65
1	20	85
8	30	115
5	15	130
9	25	155
7	30	185

Unbundling of Services--

The computerized financial model described earlier in this report may also help in dealing with this under-funding challenge. The “ubo” worksheet allows for unbundling of services both functionally and geographically. Functional unbundling of residential and commercial waste collection, industrial waste collection and transport, medical waste collection and treatment, street sweeping and washing, and beach cleaning are allowed for up to eight Tendering firms. Geographic unbundling for these same services is allowed for different 18 service zones.

The user of the model can reduce the total cost of service paid to the contractor by simply eliminating specific zones or specific services. The model also allows analysis of total cost of service with different tenderers being awarded different services by function or zone area with the objective of achieving the lowest overall annual cost to the GOA.

APPENDIX A

SAMPLE GOA FINANCIAL MODEL PRINTOUTS

(Step by step instructions for using the model are provided in the text, starting on Page 1.)

Inputs to the Financial Model

Name of Tendering Firms:

Tendering Firm No. 1
Tendering Firm No. 2
Tendering Firm No. 3
Tendering Firm No. 4
Tendering Firm No. 5
Tendering Firm No. 6
Tendering Firm No. 7
Tendering Firm No. 8

Cost of Capital

Collection: Residential and Commercial Waste	20.0%
Medical Waste Collection and Treatment	20.0%
Industrial Waste Collection and Transport	20.0%
Sweeping Streets and Washing	20.0%
Beach Cleaning Operations	20.0%
Composting Facility Rehabilitation and Operation	20.0%
Construction and Operation of New Landfill	20.0%
Closing Existing Dumps	20.0%
Transition to New System	20.0%

Price Escalators for Population Growth and Inflation:

	Year 4	Year 7	Year 10	Year 13
Tendering Firm No. 1	10.0%	10.0%	10.0%	10.0%
Tendering Firm No. 2	10.0%	10.0%	11.0%	11.0%
Tendering Firm No. 3	9.0%	9.5%	9.5%	9.5%
Tendering Firm No. 4	11.0%	11.0%	10.5%	10.5%
Tendering Firm No. 5	10.5%	10.5%	10.0%	10.0%
Tendering Firm No. 6	12.0%	11.0%	10.0%	10.0%
Tendering Firm No. 7	10.0%	10.0%	10.0%	10.0%
Tendering Firm No. 8	9.5%	9.5%	9.5%	9.5%

Present Value of Costs: Functional and Geographic Summary
Tendering Firm No. 1

	Present Value Collection: Residential/Comm.	Present Value Collection: Medical Waste	Present Value Collection: Industrial Waste	Present Value Street Sweeping & Washing	Present Value Beach Cleaning Operations	Present Value Composting Facility Rehabilitation & Operation	Present Value Construction & Operation of New Landfill	Present Value Closing Existing Dumps	Present Value of Transition to New System
Zone1	5,190,299	5,190,299	5,190,299	5,190,299	5,190,299	-	-	-	-
Zone2	5,709,328	5,709,328	5,709,328	5,709,328	5,709,328	-	-	-	-
Zone3	4,671,269	4,671,269	4,671,269	4,671,269	4,671,269	-	-	-	-
Zone4	5,190,299	5,190,299	5,190,299	5,190,299	5,190,299	-	-	-	-
Zone5	1,557,090	1,557,090	1,557,090	1,557,090	1,557,090	-	-	-	-
Zone6	6,384,067	6,384,067	6,384,067	6,384,067	6,384,067	-	-	-	-
Zone7	5,190,299	5,190,299	5,190,299	5,190,299	5,190,299	-	-	-	-
Zone8	6,903,097	6,903,097	6,903,097	6,903,097	6,903,097	-	-	-	-
Zone9	6,404,828	6,404,828	6,404,828	6,404,828	6,404,828	-	-	-	-
Zone10	5,034,590	5,034,590	5,034,590	5,034,590	5,034,590	-	-	-	-
Zone11	9,861,567	9,861,567	9,861,567	9,861,567	9,861,567	-	-	-	-
Zone12	519,030	519,030	519,030	519,030	519,030	-	-	-	-
Zone13	2,595,149	2,595,149	2,595,149	2,595,149	2,595,149	-	-	-	-
Zone14	5,190,299	5,190,299	5,190,299	5,190,299	5,190,299	-	-	-	-
Zone15	8,480,948	8,480,948	8,480,948	8,480,948	8,480,948	-	-	-	-
Zone16	6,176,455	6,176,455	6,176,455	6,176,455	6,176,455	-	-	-	-
Zone17	7,006,903	7,006,903	7,006,903	7,006,903	7,006,903	-	-	-	-
Zone18	6,747,388	6,747,388	6,747,388	6,747,388	6,747,388	-	-	-	-
Total for Zones 1-18	98,812,904	98,812,904	98,812,904	98,812,904	98,812,904	4,671	519	4,671	519
Total Present Value	494,074,899								

Summary Table of Total Present Values for All Services

Total Present Value of Service in LE by Service and Tendering Firm

Firm	Collect: Residential & Commercial Waste	Medical Waste Collect & Treat	Industrial Waste Collect & Transport	Sweeping Streets and Washing	Beach Cleaning Operations	Composting Facility Rehab. & Operation	Construct & Ops. of New Landfill	Closing Existing Dumps	Transition to New System	Total Present Value
Tendering Firm No. 1	98,812,904	98,812,904	98,812,904	98,812,904	98,812,904	4,671	519	4,671	519	494,074,899
Tendering Firm No. 2	99,027,225	99,027,225	99,027,225	99,027,225	99,027,225	4,681	520	4,681	520	495,146,527
Tendering Firm No. 3	98,024,426	98,024,426	98,024,426	98,024,426	98,024,426	4,634	515	4,634	515	490,132,428
Tendering Firm No. 4	99,759,996	99,759,996	99,759,996	99,759,996	99,759,996	4,716	524	4,716	524	498,810,459
Tendering Firm No. 5	99,231,274	99,231,274	99,231,274	99,231,274	99,231,274	4,691	521	4,691	521	496,166,797
Tendering Firm No. 6	100,187,483	100,187,483	100,187,483	100,187,483	100,187,483	4,736	526	4,736	526	500,947,942
Tendering Firm No. 7	98,812,904	98,812,904	98,812,904	98,812,904	98,812,904	4,671	519	4,671	519	494,074,899
Tendering Firm No. 8	98,290,120	98,290,120	98,290,120	98,290,120	98,290,120	4,647	516	4,647	516	491,460,924

Unbundling Options:

Tendering Firm No. 1

Place an "x" in the yellow input cells if service is to be included

Place an "x" in input cell if Zone is to be included.		x Present Value Collection: Residential/Comm.	x Present Value Collection: Medical Waste	x Present Value Collection: Industrial Waste	x Present Value Street Sweeping & Public Cleansing	x Present Value Beach Cleaning
x	Zone1	5,190,299	5,190,299	5,190,299	5,190,299	5,190,299
x	Zone2	5,709,328	5,709,328	5,709,328	5,709,328	5,709,328
x	Zone3	4,671,269	4,671,269	4,671,269	4,671,269	4,671,269
x	Zone4	5,190,299	5,190,299	5,190,299	5,190,299	5,190,299
x	Zone5	1,557,090	1,557,090	1,557,090	1,557,090	1,557,090
x	Zone6	6,384,067	6,384,067	6,384,067	6,384,067	6,384,067
x	Zone7	5,190,299	5,190,299	5,190,299	5,190,299	5,190,299
x	Zone8	6,903,097	6,903,097	6,903,097	6,903,097	6,903,097
x	Zone9	6,404,828	6,404,828	6,404,828	6,404,828	6,404,828
x	Zone10	5,034,590	5,034,590	5,034,590	5,034,590	5,034,590
x	Zone11	9,861,567	9,861,567	9,861,567	9,861,567	9,861,567
x	Zone12	519,030	519,030	519,030	519,030	519,030
x	Zone13	2,595,149	2,595,149	2,595,149	2,595,149	2,595,149
x	Zone14	5,190,299	5,190,299	5,190,299	5,190,299	5,190,299
x	Zone15	8,480,948	8,480,948	8,480,948	8,480,948	8,480,948
x	Zone16	6,176,455	6,176,455	6,176,455	6,176,455	6,176,455
x	Zone17	7,006,903	7,006,903	7,006,903	7,006,903	7,006,903
x	Zone18	6,747,388	6,747,388	6,747,388	6,747,388	6,747,388
Total for Zones 1-18		98,812,904	98,812,904	98,812,904	98,812,904	98,812,904

Collection: Residential and Commercial Waste
Tendering Firm No. 1

	Present Value	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Zone1	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone2	5,709,328	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100	1,610,510	1,610,510	1,610,510
Zone3	4,671,269	900,000	900,000	900,000	990,000	990,000	990,000	1,089,000	1,089,000	1,089,000	1,197,900	1,197,900	1,197,900	1,317,690	1,317,690	1,317,690
Zone4	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone5	1,557,090	300,000	300,000	300,000	330,000	330,000	330,000	363,000	363,000	363,000	399,300	399,300	399,300	439,230	439,230	439,230
Zone6	6,384,067	1,230,000	1,230,000	1,230,000	1,353,000	1,353,000	1,353,000	1,488,300	1,488,300	1,488,300	1,637,130	1,637,130	1,637,130	1,800,843	1,800,843	1,800,843
Zone7	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone8	6,903,097	1,330,000	1,330,000	1,330,000	1,463,000	1,463,000	1,463,000	1,609,300	1,609,300	1,609,300	1,770,230	1,770,230	1,770,230	1,947,253	1,947,253	1,947,253
Zone9	6,404,828	1,234,000	1,234,000	1,234,000	1,357,400	1,357,400	1,357,400	1,493,140	1,493,140	1,493,140	1,642,454	1,642,454	1,642,454	1,806,699	1,806,699	1,806,699
Zone10	5,034,590	970,000	970,000	970,000	1,067,000	1,067,000	1,067,000	1,173,700	1,173,700	1,173,700	1,291,070	1,291,070	1,291,070	1,420,177	1,420,177	1,420,177
Zone11	9,861,567	1,900,000	1,900,000	1,900,000	2,090,000	2,090,000	2,090,000	2,299,000	2,299,000	2,299,000	2,528,900	2,528,900	2,528,900	2,781,790	2,781,790	2,781,790
Zone12	519,030	100,000	100,000	100,000	110,000	110,000	110,000	121,000	121,000	121,000	133,100	133,100	133,100	146,410	146,410	146,410
Zone13	2,595,149	500,000	500,000	500,000	550,000	550,000	550,000	605,000	605,000	605,000	665,500	665,500	665,500	732,050	732,050	732,050
Zone14	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone15	8,480,948	1,634,000	1,634,000	1,634,000	1,797,400	1,797,400	1,797,400	1,977,140	1,977,140	1,977,140	2,174,854	2,174,854	2,174,854	2,392,339	2,392,339	2,392,339
Zone16	6,176,455	1,190,000	1,190,000	1,190,000	1,309,000	1,309,000	1,309,000	1,439,900	1,439,900	1,439,900	1,583,890	1,583,890	1,583,890	1,742,279	1,742,279	1,742,279
Zone17	7,006,903	1,350,000	1,350,000	1,350,000	1,485,000	1,485,000	1,485,000	1,633,500	1,633,500	1,633,500	1,796,850	1,796,850	1,796,850	1,976,535	1,976,535	1,976,535
Zone18	6,747,388	1,300,000	1,300,000	1,300,000	1,430,000	1,430,000	1,430,000	1,573,000	1,573,000	1,573,000	1,730,300	1,730,300	1,730,300	1,903,330	1,903,330	1,903,330
Total for Zones 1-18	98,812,904	19,038,000	19,038,000	19,038,000	20,941,800	20,941,800	20,941,800	23,035,980	23,035,980	23,035,980	25,339,578	25,339,578	25,339,578	27,873,536	27,873,536	27,873,536

Medical Waste Collection and Treatment
Tendering Firm No. 1

	Present Value	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Zone1	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone2	5,709,328	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100	1,610,510	1,610,510	1,610,510
Zone3	4,671,269	900,000	900,000	900,000	990,000	990,000	990,000	1,089,000	1,089,000	1,089,000	1,197,900	1,197,900	1,197,900	1,317,690	1,317,690	1,317,690
Zone4	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone5	1,557,090	300,000	300,000	300,000	330,000	330,000	330,000	363,000	363,000	363,000	399,300	399,300	399,300	439,230	439,230	439,230
Zone6	6,384,067	1,230,000	1,230,000	1,230,000	1,353,000	1,353,000	1,353,000	1,488,300	1,488,300	1,488,300	1,637,130	1,637,130	1,637,130	1,800,843	1,800,843	1,800,843
Zone7	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone8	6,903,097	1,330,000	1,330,000	1,330,000	1,463,000	1,463,000	1,463,000	1,609,300	1,609,300	1,609,300	1,770,230	1,770,230	1,770,230	1,947,253	1,947,253	1,947,253
Zone9	6,404,828	1,234,000	1,234,000	1,234,000	1,357,400	1,357,400	1,357,400	1,493,140	1,493,140	1,493,140	1,642,454	1,642,454	1,642,454	1,806,699	1,806,699	1,806,699
Zone10	5,034,590	970,000	970,000	970,000	1,067,000	1,067,000	1,067,000	1,173,700	1,173,700	1,173,700	1,291,070	1,291,070	1,291,070	1,420,177	1,420,177	1,420,177
Zone11	9,861,567	1,900,000	1,900,000	1,900,000	2,090,000	2,090,000	2,090,000	2,299,000	2,299,000	2,299,000	2,528,900	2,528,900	2,528,900	2,781,790	2,781,790	2,781,790
Zone12	519,030	100,000	100,000	100,000	110,000	110,000	110,000	121,000	121,000	121,000	133,100	133,100	133,100	146,410	146,410	146,410
Zone13	2,595,149	500,000	500,000	500,000	550,000	550,000	550,000	605,000	605,000	605,000	665,500	665,500	665,500	732,050	732,050	732,050
Zone14	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone15	8,480,948	1,634,000	1,634,000	1,634,000	1,797,400	1,797,400	1,797,400	1,977,140	1,977,140	1,977,140	2,174,854	2,174,854	2,174,854	2,392,339	2,392,339	2,392,339
Zone16	6,176,455	1,190,000	1,190,000	1,190,000	1,309,000	1,309,000	1,309,000	1,439,900	1,439,900	1,439,900	1,583,890	1,583,890	1,583,890	1,742,279	1,742,279	1,742,279
Zone17	7,006,903	1,350,000	1,350,000	1,350,000	1,485,000	1,485,000	1,485,000	1,633,500	1,633,500	1,633,500	1,796,850	1,796,850	1,796,850	1,976,535	1,976,535	1,976,535
Zone18	6,747,388	1,300,000	1,300,000	1,300,000	1,430,000	1,430,000	1,430,000	1,573,000	1,573,000	1,573,000	1,730,300	1,730,300	1,730,300	1,903,330	1,903,330	1,903,330
Total for Zones 1-18	98,812,904	19,038,000	19,038,000	19,038,000	20,941,800	20,941,800	20,941,800	23,035,980	23,035,980	23,035,980	25,339,578	25,339,578	25,339,578	27,873,536	27,873,536	27,873,536

Industrial Waste Collection and Transport
Tendering Firm No. 1

	Present Value	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Zone1	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone2	5,709,328	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100	1,610,510	1,610,510	1,610,510
Zone3	4,671,269	900,000	900,000	900,000	990,000	990,000	990,000	1,089,000	1,089,000	1,089,000	1,197,900	1,197,900	1,197,900	1,317,690	1,317,690	1,317,690
Zone4	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone5	1,557,090	300,000	300,000	300,000	330,000	330,000	330,000	363,000	363,000	363,000	399,300	399,300	399,300	439,230	439,230	439,230
Zone6	6,384,067	1,230,000	1,230,000	1,230,000	1,353,000	1,353,000	1,353,000	1,488,300	1,488,300	1,488,300	1,637,130	1,637,130	1,637,130	1,800,843	1,800,843	1,800,843
Zone7	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone8	6,903,097	1,330,000	1,330,000	1,330,000	1,463,000	1,463,000	1,463,000	1,609,300	1,609,300	1,609,300	1,770,230	1,770,230	1,770,230	1,947,253	1,947,253	1,947,253
Zone9	6,404,828	1,234,000	1,234,000	1,234,000	1,357,400	1,357,400	1,357,400	1,493,140	1,493,140	1,493,140	1,642,454	1,642,454	1,642,454	1,806,699	1,806,699	1,806,699
Zone10	5,034,590	970,000	970,000	970,000	1,067,000	1,067,000	1,067,000	1,173,700	1,173,700	1,173,700	1,291,070	1,291,070	1,291,070	1,420,177	1,420,177	1,420,177
Zone11	9,861,567	1,900,000	1,900,000	1,900,000	2,090,000	2,090,000	2,090,000	2,299,000	2,299,000	2,299,000	2,528,900	2,528,900	2,528,900	2,781,790	2,781,790	2,781,790
Zone12	519,030	100,000	100,000	100,000	110,000	110,000	110,000	121,000	121,000	121,000	133,100	133,100	133,100	146,410	146,410	146,410
Zone13	2,595,149	500,000	500,000	500,000	550,000	550,000	550,000	605,000	605,000	605,000	665,500	665,500	665,500	732,050	732,050	732,050
Zone14	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone15	8,480,948	1,634,000	1,634,000	1,634,000	1,797,400	1,797,400	1,797,400	1,977,140	1,977,140	1,977,140	2,174,854	2,174,854	2,174,854	2,392,339	2,392,339	2,392,339
Zone16	6,176,455	1,190,000	1,190,000	1,190,000	1,309,000	1,309,000	1,309,000	1,439,900	1,439,900	1,439,900	1,583,890	1,583,890	1,583,890	1,742,279	1,742,279	1,742,279
Zone17	7,006,903	1,350,000	1,350,000	1,350,000	1,485,000	1,485,000	1,485,000	1,633,500	1,633,500	1,633,500	1,796,850	1,796,850	1,796,850	1,976,535	1,976,535	1,976,535
Zone18	6,747,388	1,300,000	1,300,000	1,300,000	1,430,000	1,430,000	1,430,000	1,573,000	1,573,000	1,573,000	1,730,300	1,730,300	1,730,300	1,903,330	1,903,330	1,903,330
Total for Zones 1-18	98,812,904	19,038,000	19,038,000	19,038,000	20,941,800	20,941,800	20,941,800	23,035,980	23,035,980	23,035,980	25,339,578	25,339,578	25,339,578	27,873,536	27,873,536	27,873,536

Street Sweeping and Washing
Tendering Firm No. 1

	Present Value	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Zone1	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone2	5,709,328	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100	1,610,510	1,610,510	1,610,510
Zone3	4,671,269	900,000	900,000	900,000	990,000	990,000	990,000	1,089,000	1,089,000	1,089,000	1,197,900	1,197,900	1,197,900	1,317,690	1,317,690	1,317,690
Zone4	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone5	1,557,090	300,000	300,000	300,000	330,000	330,000	330,000	363,000	363,000	363,000	399,300	399,300	399,300	439,230	439,230	439,230
Zone6	6,384,067	1,230,000	1,230,000	1,230,000	1,353,000	1,353,000	1,353,000	1,488,300	1,488,300	1,488,300	1,637,130	1,637,130	1,637,130	1,800,843	1,800,843	1,800,843
Zone7	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone8	6,903,097	1,330,000	1,330,000	1,330,000	1,463,000	1,463,000	1,463,000	1,609,300	1,609,300	1,609,300	1,770,230	1,770,230	1,770,230	1,947,253	1,947,253	1,947,253
Zone9	6,404,828	1,234,000	1,234,000	1,234,000	1,357,400	1,357,400	1,357,400	1,493,140	1,493,140	1,493,140	1,642,454	1,642,454	1,642,454	1,806,699	1,806,699	1,806,699
Zone10	5,034,590	970,000	970,000	970,000	1,067,000	1,067,000	1,067,000	1,173,700	1,173,700	1,173,700	1,291,070	1,291,070	1,291,070	1,420,177	1,420,177	1,420,177
Zone11	9,861,567	1,900,000	1,900,000	1,900,000	2,090,000	2,090,000	2,090,000	2,299,000	2,299,000	2,299,000	2,528,900	2,528,900	2,528,900	2,781,790	2,781,790	2,781,790
Zone12	519,030	100,000	100,000	100,000	110,000	110,000	110,000	121,000	121,000	121,000	133,100	133,100	133,100	146,410	146,410	146,410
Zone13	2,595,149	500,000	500,000	500,000	550,000	550,000	550,000	605,000	605,000	605,000	665,500	665,500	665,500	732,050	732,050	732,050
Zone14	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone15	8,480,948	1,634,000	1,634,000	1,634,000	1,797,400	1,797,400	1,797,400	1,977,140	1,977,140	1,977,140	2,174,854	2,174,854	2,174,854	2,392,339	2,392,339	2,392,339
Zone16	6,176,455	1,190,000	1,190,000	1,190,000	1,309,000	1,309,000	1,309,000	1,439,900	1,439,900	1,439,900	1,583,890	1,583,890	1,583,890	1,742,279	1,742,279	1,742,279
Zone17	7,006,903	1,350,000	1,350,000	1,350,000	1,485,000	1,485,000	1,485,000	1,633,500	1,633,500	1,633,500	1,796,850	1,796,850	1,796,850	1,976,535	1,976,535	1,976,535
Zone18	6,747,388	1,300,000	1,300,000	1,300,000	1,430,000	1,430,000	1,430,000	1,573,000	1,573,000	1,573,000	1,730,300	1,730,300	1,730,300	1,903,330	1,903,330	1,903,330
Total for Zones 1-18	98,812,904	19,038,000	19,038,000	19,038,000	20,941,800	20,941,800	20,941,800	23,035,980	23,035,980	23,035,980	25,339,578	25,339,578	25,339,578	27,873,536	27,873,536	27,873,536

Beach Cleaning Operations
Tendering Firm No. 1

	Present Value	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Zone1	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone2	5,709,328	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100	1,610,510	1,610,510	1,610,510
Zone3	4,671,269	900,000	900,000	900,000	990,000	990,000	990,000	1,089,000	1,089,000	1,089,000	1,197,900	1,197,900	1,197,900	1,317,690	1,317,690	1,317,690
Zone4	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone5	1,557,090	300,000	300,000	300,000	330,000	330,000	330,000	363,000	363,000	363,000	399,300	399,300	399,300	439,230	439,230	439,230
Zone6	6,384,067	1,230,000	1,230,000	1,230,000	1,353,000	1,353,000	1,353,000	1,488,300	1,488,300	1,488,300	1,637,130	1,637,130	1,637,130	1,800,843	1,800,843	1,800,843
Zone7	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone8	6,903,097	1,330,000	1,330,000	1,330,000	1,463,000	1,463,000	1,463,000	1,609,300	1,609,300	1,609,300	1,770,230	1,770,230	1,770,230	1,947,253	1,947,253	1,947,253
Zone9	6,404,828	1,234,000	1,234,000	1,234,000	1,357,400	1,357,400	1,357,400	1,493,140	1,493,140	1,493,140	1,642,454	1,642,454	1,642,454	1,806,699	1,806,699	1,806,699
Zone10	5,034,590	970,000	970,000	970,000	1,067,000	1,067,000	1,067,000	1,173,700	1,173,700	1,173,700	1,291,070	1,291,070	1,291,070	1,420,177	1,420,177	1,420,177
Zone11	9,861,567	1,900,000	1,900,000	1,900,000	2,090,000	2,090,000	2,090,000	2,299,000	2,299,000	2,299,000	2,528,900	2,528,900	2,528,900	2,781,790	2,781,790	2,781,790
Zone12	519,030	100,000	100,000	100,000	110,000	110,000	110,000	121,000	121,000	121,000	133,100	133,100	133,100	146,410	146,410	146,410
Zone13	2,595,149	500,000	500,000	500,000	550,000	550,000	550,000	605,000	605,000	605,000	665,500	665,500	665,500	732,050	732,050	732,050
Zone14	5,190,299	1,000,000	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,210,000	1,210,000	1,210,000	1,331,000	1,331,000	1,331,000	1,464,100	1,464,100	1,464,100
Zone15	8,480,948	1,634,000	1,634,000	1,634,000	1,797,400	1,797,400	1,797,400	1,977,140	1,977,140	1,977,140	2,174,854	2,174,854	2,174,854	2,392,339	2,392,339	2,392,339
Zone16	6,176,455	1,190,000	1,190,000	1,190,000	1,309,000	1,309,000	1,309,000	1,439,900	1,439,900	1,439,900	1,583,890	1,583,890	1,583,890	1,742,279	1,742,279	1,742,279
Zone17	7,006,903	1,350,000	1,350,000	1,350,000	1,485,000	1,485,000	1,485,000	1,633,500	1,633,500	1,633,500	1,796,850	1,796,850	1,796,850	1,976,535	1,976,535	1,976,535
Zone18	6,747,388	1,300,000	1,300,000	1,300,000	1,430,000	1,430,000	1,430,000	1,573,000	1,573,000	1,573,000	1,730,300	1,730,300	1,730,300	1,903,330	1,903,330	1,903,330
Total for Zones 1-18	98,812,904	19,038,000	19,038,000	19,038,000	20,941,800	20,941,800	20,941,800	23,035,980	23,035,980	23,035,980	25,339,578	25,339,578	25,339,578	27,873,536	27,873,536	27,873,536

Composting Facility Rehabilitation and Operation

	Present Value	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Tendering Firm No. 1																
Facility 1	519	100	100	100	110	110	110	121	121	121	133	133	133	146	146	146
Facility 2	1,557	300	300	300	330	330	330	363	363	363	399	399	399	439	439	439
Facility 3	2,595	500	500	500	550	550	550	605	605	605	666	666	666	732	732	732
Total	4,671	900	900	900	990	990	990	1,089	1,089	1,089	1,198	1,198	1,198	1,318	1,318	1,318
Tendering Firm No. 2																
Facility 1	520	100	100	100	110	110	110	121	121	121	134	134	134	149	149	149
Facility 2	1,560	300	300	300	330	330	330	363	363	363	403	403	403	447	447	447
Facility 3	2,601	500	500	500	550	550	550	605	605	605	672	672	672	745	745	745
Total	4,681	900	900	900	990	990	990	1,089	1,089	1,089	1,209	1,209	1,209	1,342	1,342	1,342
Tendering Firm No. 3																
Facility 1	515	100	100	100	109	109	109	119	119	119	131	131	131	143	143	143
Facility 2	1,545	300	300	300	327	327	327	358	358	358	392	392	392	429	429	429
Facility 3	2,574	500	500	500	545	545	545	597	597	597	653	653	653	716	716	716
Total	4,634	900	900	900	981	981	981	1,074	1,074	1,074	1,176	1,176	1,176	1,288	1,288	1,288
Tendering Firm No. 4																
Facility 1	524	100	100	100	111	111	111	123	123	123	136	136	136	150	150	150
Facility 2	1,572	300	300	300	333	333	333	370	370	370	408	408	408	451	451	451
Facility 3	2,620	500	500	500	555	555	555	616	616	616	681	681	681	752	752	752
Total	4,716	900	900	900	999	999	999	1,109	1,109	1,109	1,225	1,225	1,225	1,354	1,354	1,354
Tendering Firm No. 5																
Facility 1	521	100	100	100	111	111	111	122	122	122	134	134	134	148	148	148
Facility 2	1,564	300	300	300	332	332	332	366	366	366	403	403	403	443	443	443
Facility 3	2,606	500	500	500	553	553	553	611	611	611	672	672	672	739	739	739
Total	4,691	900	900	900	995	995	995	1,099	1,099	1,099	1,209	1,209	1,209	1,330	1,330	1,330
Tendering Firm No. 6																
Facility 1	526	100	100	100	112	112	112	124	124	124	137	137	137	150	150	150
Facility 2	1,579	300	300	300	336	336	336	373	373	373	410	410	410	451	451	451
Facility 3	2,631	500	500	500	560	560	560	622	622	622	684	684	684	752	752	752
Total	4,736	900	900	900	1,008	1,008	1,008	1,119	1,119	1,119	1,231	1,231	1,231	1,354	1,354	1,354
Tendering Firm No. 7																
Facility 1	519	100	100	100	110	110	110	121	121	121	133	133	133	146	146	146
Facility 2	1,557	300	300	300	330	330	330	363	363	363	399	399	399	439	439	439
Facility 3	2,595	500	500	500	550	550	550	605	605	605	666	666	666	732	732	732
Total	4,671	900	900	900	990	990	990	1,089	1,089	1,089	1,198	1,198	1,198	1,318	1,318	1,318
Tendering Firm No. 8																
Facility 1	516	100	100	100	110	110	110	120	120	120	131	131	131	144	144	144
Facility 2	1,549	300	300	300	329	329	329	360	360	360	394	394	394	431	431	431
Facility 3	2,581	500	500	500	548	548	548	600	600	600	656	656	656	719	719	719
Total	4,647	900	900	900	986	986	986	1,079	1,079	1,079	1,182	1,182	1,182	1,294	1,294	1,294

Construction and Operation of New Landfill

		Present Value	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Tendering Firm No. 1	Facility 1	519	100	100	100	110	110	110	121	121	121	133	133	133	146	146	146
Tendering Firm No. 2	Facility 1	520	100	100	100	110	110	110	121	121	121	134	134	134	149	149	149
Tendering Firm No. 3	Facility 1	515	100	100	100	109	109	109	119	119	119	131	131	131	143	143	143
Tendering Firm No. 4	Facility 1	524	100	100	100	111	111	111	123	123	123	136	136	136	150	150	150
Tendering Firm No. 5	Facility 1	521	100	100	100	111	111	111	122	122	122	134	134	134	148	148	148
Tendering Firm No. 6	Facility 1	526	100	100	100	112	112	112	124	124	124	137	137	137	150	150	150
Tendering Firm No. 7	Facility 1	519	100	100	100	110	110	110	121	121	121	133	133	133	146	146	146
Tendering Firm No. 8	Facility 1	516	100	100	100	110	110	110	120	120	120	131	131	131	144	144	144

Closing Existing Dumps

	Present Value	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Tendering Firm No. 1																
Facility 1	519	100	100	100	110	110	110	121	121	121	133	133	133	146	146	146
Facility 2	1,557	300	300	300	330	330	330	363	363	363	399	399	399	439	439	439
Facility 3	2,595	500	500	500	550	550	550	605	605	605	666	666	666	732	732	732
Total	4,671	900	900	900	990	990	990	1,089	1,089	1,089	1,198	1,198	1,198	1,318	1,318	1,318
Tendering Firm No. 2																
Facility 1	520	100	100	100	110	110	110	121	121	121	134	134	134	149	149	149
Facility 2	1,560	300	300	300	330	330	330	363	363	363	403	403	403	447	447	447
Facility 3	2,601	500	500	500	550	550	550	605	605	605	672	672	672	745	745	745
Total	4,681	900	900	900	990	990	990	1,089	1,089	1,089	1,209	1,209	1,209	1,342	1,342	1,342
Tendering Firm No. 3																
Facility 1	515	100	100	100	109	109	109	119	119	119	131	131	131	143	143	143
Facility 2	1,545	300	300	300	327	327	327	358	358	358	392	392	392	429	429	429
Facility 3	2,574	500	500	500	545	545	545	597	597	597	653	653	653	716	716	716
Total	4,634	900	900	900	981	981	981	1,074	1,074	1,074	1,176	1,176	1,176	1,288	1,288	1,288
Tendering Firm No. 4																
Facility 1	524	100	100	100	111	111	111	123	123	123	136	136	136	150	150	150
Facility 2	1,572	300	300	300	333	333	333	370	370	370	408	408	408	451	451	451
Facility 3	2,620	500	500	500	555	555	555	616	616	616	681	681	681	752	752	752
Total	4,716	900	900	900	999	999	999	1,109	1,109	1,109	1,225	1,225	1,225	1,354	1,354	1,354
Tendering Firm No. 5																
Facility 1	521	100	100	100	111	111	111	122	122	122	134	134	134	148	148	148
Facility 2	1,564	300	300	300	332	332	332	366	366	366	403	403	403	443	443	443
Facility 3	2,606	500	500	500	553	553	553	611	611	611	672	672	672	739	739	739
Total	4,691	900	900	900	995	995	995	1,099	1,099	1,099	1,209	1,209	1,209	1,330	1,330	1,330
Tendering Firm No. 6																
Facility 1	526	100	100	100	112	112	112	124	124	124	137	137	137	150	150	150
Facility 2	1,579	300	300	300	336	336	336	373	373	373	410	410	410	451	451	451
Facility 3	2,631	500	500	500	560	560	560	622	622	622	684	684	684	752	752	752
Total	4,736	900	900	900	1,008	1,008	1,008	1,119	1,119	1,119	1,231	1,231	1,231	1,354	1,354	1,354
Tendering Firm No. 7																
Facility 1	519	100	100	100	110	110	110	121	121	121	133	133	133	146	146	146
Facility 2	1,557	300	300	300	330	330	330	363	363	363	399	399	399	439	439	439
Facility 3	2,595	500	500	500	550	550	550	605	605	605	666	666	666	732	732	732
Total	4,671	900	900	900	990	990	990	1,089	1,089	1,089	1,198	1,198	1,198	1,318	1,318	1,318
Tendering Firm No. 8																
Facility 1	516	100	100	100	110	110	110	120	120	120	131	131	131	144	144	144
Facility 2	1,549	300	300	300	329	329	329	360	360	360	394	394	394	431	431	431
Facility 3	2,581	500	500	500	548	548	548	600	600	600	656	656	656	719	719	719
Total	4,647	900	900	900	986	986	986	1,079	1,079	1,079	1,182	1,182	1,182	1,294	1,294	1,294

Transition to New System

	Present Value	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Tendering Firm No. 1	519	100	100	100	110	110	110	121	121	121	133	133	133	146	146	146
Tendering Firm No. 2	520	100	100	100	110	110	110	121	121	121	134	134	134	149	149	149
Tendering Firm No. 3	515	100	100	100	109	109	109	119	119	119	131	131	131	143	143	143
Tendering Firm No. 4	524	100	100	100	111	111	111	123	123	123	136	136	136	150	150	150
Tendering Firm No. 5	521	100	100	100	111	111	111	122	122	122	134	134	134	148	148	148
Tendering Firm No. 6	526	100	100	100	112	112	112	124	124	124	137	137	137	150	150	150
Tendering Firm No. 7	519	100	100	100	110	110	110	121	121	121	133	133	133	146	146	146
Tendering Firm No. 8	516	100	100	100	110	110	110	120	120	120	131	131	131	144	144	144